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# Designing for Inclusive AI

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***The resulting gap between the design and operation of algorithms and our understanding of their ethical implications can have severe consequences affecting individuals, groups and whole segments of society.***

-Mittelstadt, et al.<sup>1</sup>

## The Problem

AI has the potential to address economic and political injustice and contribute to more fair, equitable and sustainable societies. However, studies repeatedly demonstrate that AI tools are biased and actively discriminate against people of color, people with disabilities, poor people, and women. The reason for this is not necessarily intentional, but rather the result of uncritical assumptions and implicit bias in tools and processes used in the development, training and implementation of AI.

AI bias has real-world consequences.  
Race, gender, ability, and class biases are manifest in:

- Facial recognition and classification
- Motion recognition and classification
- Gender recognition and classification
- Emotion recognition and classification
- Natural Language Processing
- Video captioning
- Health Care assessment
- Predictive policing
- Prison sentencing
- CV evaluation
- Bank loan risk evaluation
- Admissions evaluation
- Hate speech detection +

***Currently there is no standard way to identify how a dataset was created, and what characteristics, motivations, and potential skews it represents.***

-Gebru et al.<sup>3</sup>

## The Opportunities

Interdisciplinary teams can work towards implementing inclusivity and fairness in AI at every level, including

- Planning and design

Are a range of sociodemographic categories included in the design and dataset (e.g., ability, age, race/ethnicity, gender, class, geographic region)?

How could the project potentially hurt, control, or profile protected (e.g., ability, race, gender, sexuality) or vulnerable (e.g., poor, imprisoned) groups?

- Dataset coding

How are fairness and inclusivity being addressed in the process of labeling, cleaning, sampling, scaling, and aggregation?

- Participatory & Inclusive Design Procedures

Involve test subjects and study participants earlier in the development  
Are usability testers and study participants drawn from diverse sociodemographic categories?

- Implementation

How does the project work with different user populations?

- Improvement and maintenance

How does unanticipated bias emerge after implementation?

What measures are in place for addressing bias after systems are implemented?

***We must hold our designs accountable to a reasonable degree of freedom from bias.***

-Friedman & Nissenbaum<sup>4</sup>

## Developing Best Practices

How do we transform machine learning and AI into ethical practices?

- *For researchers:* Inclusive design, coding, testing and practices
- *For students:* Interdisciplinary certificate in Ethical Artificial Intelligence, BA and MA level.

Incorporate ethical considerations throughout the data science curriculum.  
(National Academies of Science 2018)<sup>6</sup>

- *For projects:* Establish a protocol for data transparency and fairness (e.g., using openethics.ai).

Adopt the Ethics Certification Program for Autonomous and Intelligent Systems (ECPAIS) from IEEE.

***Who codes matters, how we code matters, why we code matters.***

-Boulamwini<sup>5</sup>

## Next Steps

Design BA/MA courses in Ethics and AI/ML

“Humans In the Loop: Robots, Automation and Humanities Research” (SP2020)

“Humans, Ethics, and AI” course; crosslisted

EU Centers of Excellence Network for Trustworthy Robotics and Intelligent Systems.  
www.centris-ai.eu



www.ajlunited.org



aiethicslab.com



d4bl.org



ainowinstitute.org

## Potential Partners

The Just Data Lab \* Design Justice Network \* Deep Learning Indaba \* The Partnership on AI  
Leverhulme Centre for the Future of Intelligence \* The Institute for Ethical AI & Machine Learning  
\* MIT-Watson AI Lab \* The Berkman Klein Center for Internet and Society \* Digital Ethics Lab

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Figure 1. *The Dynamic Still*. Jochum et al. Pictured: Sandro Masai



Figure 2. Joy Boulamwini. time.com